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## Section 2

# Regional Conveyance System Capacity Needs

## 2.1 Capacity Needs in the Separated System

System capacity needs/constraints have been identified by comparing known capacities of pump stations, pipes, and regulator stations to projected peak flows. The flow rates used in the capacity analysis are the current and projected 20-year return period peak flows. The current and projected peak flows were generated using data gathered and analyzed during the development of the Regional Infiltration and Inflow (I/I) Control Program between 2000 and 2005. A summary of that analysis is contained in Section 1 of this memo.

Table 2-1 lists all capacity constraints in the separated conveyance system based on comparing system component capacities to the peak flow demands in the system. A system map, Figure 2-1, shows the location of the existing and projected capacity constraints. An overview of how system capacities are compared to projected peak flow demands is contained in Appendix A of this memorandum.

Table 2-1 differs from Table 4-1 in the March 2005 *Regional Needs Assessment* (RNA) report in that Table 2-1 simply lists identified capacity shortfalls, or “needs”, within the regional conveyance system and when the system capacity is exceeded by the projected 20-year peak flow. Table 4-1 in the RNA listed past, current, and future capital projects to address capacity needs within the regional conveyance system. The projects listed in the RNA provided a basis for completing a benefit-cost analysis for the Regional I/I Control Program. That analysis compared the cost of I/I reduction in the service area upstream of an identified conveyance system need to the capital cost of constructing increased capacity to convey projected peak flows. These capital projects and their alternatives are now under review in order to update the region’s Conveyance System Improvement Plan. A refined list of needs and recommended capital improvements to meet those needs will be contained in the updated Plan, which is due to be completed in late 2006.

Cases where a conveyance need is being addressed through a capital project(s) under development have been noted in the last column of Table 2-1. An example of this is the Hidden Lake Pump Station/Boeing Creek Trunk Project. This project (which includes a new pump station, peak flow storage facility, and conveyance upgrades to the Boeing Creek Trunk) addresses capacity needs in the Boeing Creek Trunk, Richmond Beach Pump Station and Richmond Beach Force main and Interceptor.

Maps of capacity needs by planning basin (Figures 2-3 through 2-14) are at the end of this section.

Table 2-1. Capacity Needs in the Separated Conveyance System

| Map ID #  | Identified Conveyance Need                            | Year Exceeded | Current Project |
|---|---|---------------|-----------------|
| <b><i>Hidden Lake Planning Basin<br/>(Figure 2-3)</i></b>               |   |               |                 |
| 1   | Hidden Lake Pump Station/Boeing Creek Trunk           | 2005          | Yes             |
| 2   | Richmond Beach Pump Station/Richmond Beach Force Main | 2005          | Yes             |
| 3   | Richmond Beach Interceptor                            | 2005          | Yes             |
| <b><i>Northeast Lake Washington Planning Basin<br/>(Figure 2-4)</i></b> |   |               |                 |
| 4   | Bellevue Pump Station/Bellevue Force Main             | 2018          | Yes             |
| 5   | Bellevue Interceptor                                  | 2005          | Yes             |
| 6   | Enatai Interceptor                                    | 2005          | No              |
| 7   | Wilburton Pump Station/Factoria Trunk                 | 2005          | No              |
| 8   | Holmes Point Trunk                                    | 2005          | Yes             |
| 9   | Juanita Bay Pump Station                              | 2005          | Yes             |
| 10  | Kirkland Pump Station/Kirkland Force Main             | 2005          | Yes             |
| 11  | Lake Hills Interceptor                                | 2019          | No              |
| 12  | Medina Force Main                                     | 2023          | No              |
| 13  | Medina Trunk  | 2014          | No              |
| 14  | North Mercer Island Interceptor                       | 2005          | No              |
| 15  | Sweyolocken Pump Station/Sweyolocken Force Main       | 2005          | Yes             |
| <b><i>North Green River Planning Basin<br/>(Figure 2-5)</i></b>         |   |               |                 |
| 16  | North Soos Creek Interceptor                          | 2013          | No              |
| 17  | Rainier Vista Trunk                                   | 2015          | No              |
| 18  | South Renton Trunk                                    | 2027          | No              |
| <b><i>North Lake Sammamish Planning Basin<br/>(Figure 2-6)</i></b>      |   |               |                 |
| 19  | Lake Hills Trunk                                      | 2005          | No              |
| 20  | NW Lake Sammamish Interceptor                         | 2005          | No              |
| <b><i>North Lake Washington Planning Basin<br/>(Figure 2-7)</i></b>     |   |               |                 |
| 21  | North Creek Trunk                                     | 2005          | Yes             |
| 22  | Swamp Creek Trunk                                     | 2017          | No              |
| 23  | York Pump Station Modification                        | 2017          | No              |
| <b><i>Northwest Lake Washington Planning Basin<br/>(Figure 2-8)</i></b> |   |               |                 |
| 24  | Thornton Creek Interceptor                            | 2005          | No              |

| Map ID #  | Identified Conveyance Need                            | Year Exceeded | Current Project |
|---|---|---------------|-----------------|
| <b>Southeast Lake Washington Planning Basin<br/>(Figure 2-9)</b>                |   |               |                 |
| 25  | Coal Creek Trunk                                      | 2005          | No              |
| <b>South Green River Planning Basin, Kent Planning Zone<br/>(Figure 2-10)</b>   |   |               |                 |
| 26  | Auburn Interceptor-Section 1                          | 2031          | No              |
| 27  | Auburn Interceptor-Section 2                          | 2037          | No              |
| 28  | Auburn Interceptor-Section 3                          | 2027          | No              |
| 29  | Garrison Creek Trunk                                  | 2019          | No              |
| 30  | Kent Cascade Interceptor                              | 2005          | Yes             |
| 31  | Mill Creek Interceptor                                | 2015          | No              |
| 32  | ULID #1 - Contract #5 Kent                            | 2005          | Yes             |
| 33  | ULID #1- Contract #4 Kent                             | 2023          | No              |
| <b>South Green River Planning Basin, Auburn Planning Zone<br/>(Figure 2-11)</b> |   |               |                 |
| 34  | Pacific Pump Station/Algona Pacific Trunk             | 2005          | Yes             |
| 35  | Auburn - West Interceptor                             | 2023          | Yes             |
| 36  | Auburn - West Valley Interceptor                      | 2005          | Yes             |
| 37  | Lakeland Hills Pump Station                           | 2040          | No              |
| 38  | M Street Trunk  | 2005          | Yes             |
| 39  | West Valley Interceptor                               | 2025          | Yes             |
| <b>South Green River Planning Basin, Soos Planning Zone<br/>(Figure 2-12)</b>   |   |               |                 |
| 40  | Black Diamond Pump Station/Black Diamond Trunk        | 2005          | Yes             |
| <b>South Lake Sammamish Planning Basin<br/>(Figure 2-13)</b>                    |   |               |                 |
| 41  | Eastgate Interceptor                                  | 2005          | No              |
| 42  | Issaquah Creek Interceptor                            | 2024          | No              |
| 43  | Issaquah Interceptor - Section 1                      | 2011          | No              |
| 44  | Issaquah Interceptor - Section 2                      | 2025          | No              |
| 45  | Sunset Heathfield Pump Stations/Vasa Park Force Mains | 2005          | No              |
| <b>South Lake Washington Planning Basin<br/>(Figure 2-14)</b>                   |   |               |                 |
| 46  | Bryn Mawr Trunk                                       | 2008          | No              |
| 47  | ESI 1   | 2024          | No              |
| 48  | ESI 3   | 2033          | No              |

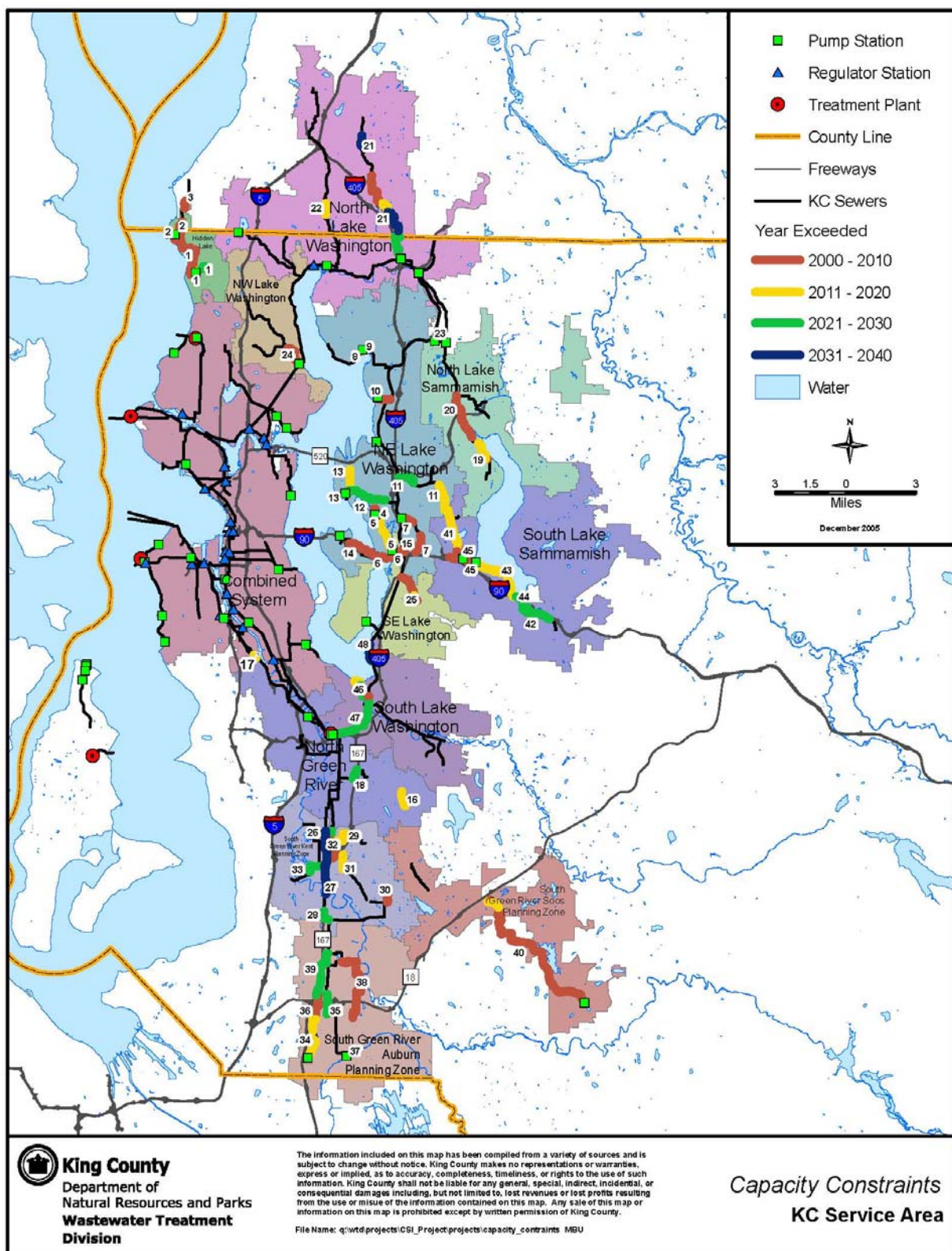


Figure 2-1. Currently Identified Capacity Constraints

## 2.2 Capacity Needs in the Combined System

Capacity needs to meet projected peak flows in the portion of the regional wastewater system that is a combined system were identified and are addressed in the County's adopted *Combined Sewer Overflow (CSO) Control Plan* (2000) and subsequent CSO control annual reports, plan updates and reviews. The information from the adopted CSO plan and subsequent updates summarized here is intended to provide a more complete picture of the capacity needs facing the entire regional conveyance system. More information about the CSO Plan is available at <http://dnr.metrokc.gov/wtd/cso/>.

As discussed in Section 1 of this memorandum, the combined system is located within the City of Seattle where wastewater and stormwater are collected and conveyed together to the West Point Treatment Plant. When flows entering the combined sewer system exceed pipe or treatment process capacity, overflows of wastewater diluted with stormwater are released into receiving waters at combined sewer overflows (CSOs). These events are referred to as CSO discharges.

The City of Seattle still owns and maintains a large portion of the combined sewer system. However, the County acquired some larger combined sewer facilities in the 1960s during the formation of Metro. The County and the City of Seattle undertake joint projects to reduce CSO discharges when regionally beneficial. The combined efforts of the County and the City to implement treatment and CSO control programs have reduced the volume of overflows from about 30 billion gallons per year in the 1960s to approximately 1.5 billion gallons per year in 2000. The state requirement for controlling CSOs is to limit untreated discharges at each CSO location to one event per year (on average). The County's program will meet state and federal regulations and agreements by 2030.

A list of CSO capacity needs with their associated planned capital projects is contained in Table 2-2 below. The project schedule shown in the table may change as a result of the next CSO update. Figure 2-2, which follows the table, is a map showing the location of the CSO needs and planned projects.

**Table 2-2. Planned CSO Control Projects**

| Map ID # | CSO Control Project                     | Project Description                   | Year Controlled |
|----------|---|---------------------------------------|-----------------|
| 1        | South Magnolia                          | 1.3-MG storage tank                   | 2010            |
| 2        | SW Alaska St <sup>a</sup>               | 0.7-MG storage tank                   | 2010            |
| 3        | Murray Ave.                             | 0.8-MG storage tank                   | 2010            |
| 4        | Barton St.                              | Pump Station upgrade                  | 2011            |
| 5        | North Beach                             | Storage tank and pump station upgrade | 2011            |
| 6        | University/Montlake                     | 7.5-MG storage tank                   | 2015            |
| 7        | Hanford                                 | 3.3-MG storage and treatment tank     | 2017            |
| 8        | West Point Treatment Plant improvements | Primary and secondary enhancements    | 2018            |
| 9        | Lander St.                              | 1.5-MG storage/treatment at Hanford   | 2019            |
| 10       | Michigan                                | 2.2-MG storage and treatment tank     | 2022            |

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| Map ID #  | CSO Control Project     | Project Description                     | Year Controlled |
|---|-------------------------|---|-----------------|
| 11  | Brandon St.             | 0.8-MG storage and treatment tank       | 2022            |
| 12  | Chelan Avenue           | 4-MG storage tank                       | 2024            |
| 13  | Connecticut St.         | 2.1-MG storage and treatment tank       | 2026            |
| 14  | King St.                | Conveyance to Connecticut St. treatment | 2026            |
| 15  | Hanford at Rainier Ave. | 0.6-MG storage tank                     | 2026            |
| 16  | 8th Ave. S              | 1.0 MG storage tank                     | 2027            |
| 17  | West Michigan           | Conveyance upgrade                      | 2027            |
| 18  | Terminal 115            | 0.5-MG storage tank                     | 2027            |
| 19  | 3rd Avenue W            | 5.5-MG storage tank                     | 2027            |
| 20  | Ballard                 | 1.0-MG storage tank (40% King County)   | 2029            |
| 21  | 11th Ave. NW            | 2.0-MG storage tank                     | 2030            |
| <sup>a</sup> The SW Alaska Street project is no longer needed; updated monitoring and modeling data indicate that this CSO is already controlled. |                         |   |                 |



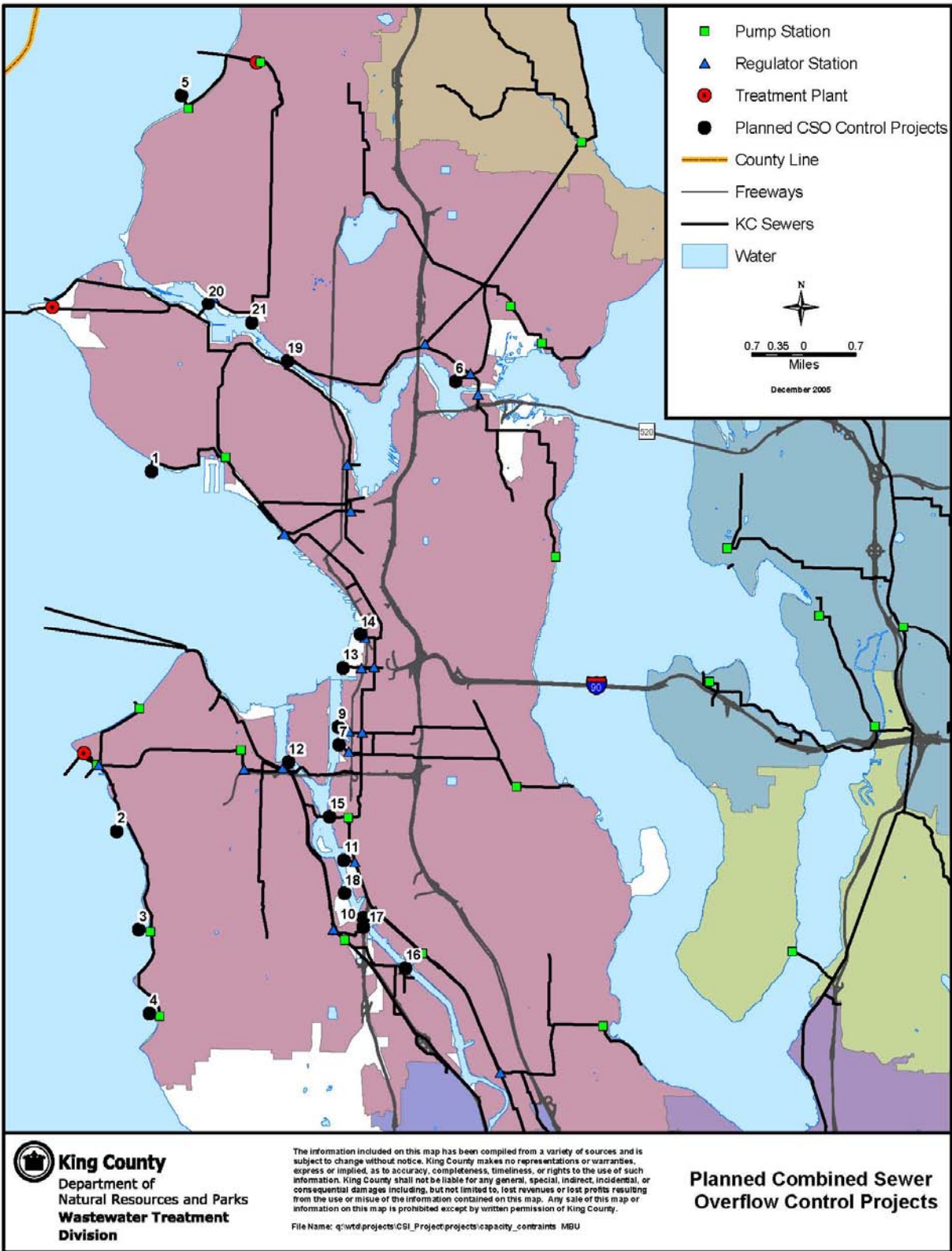


Figure 2-2. Planned CSO Control projects

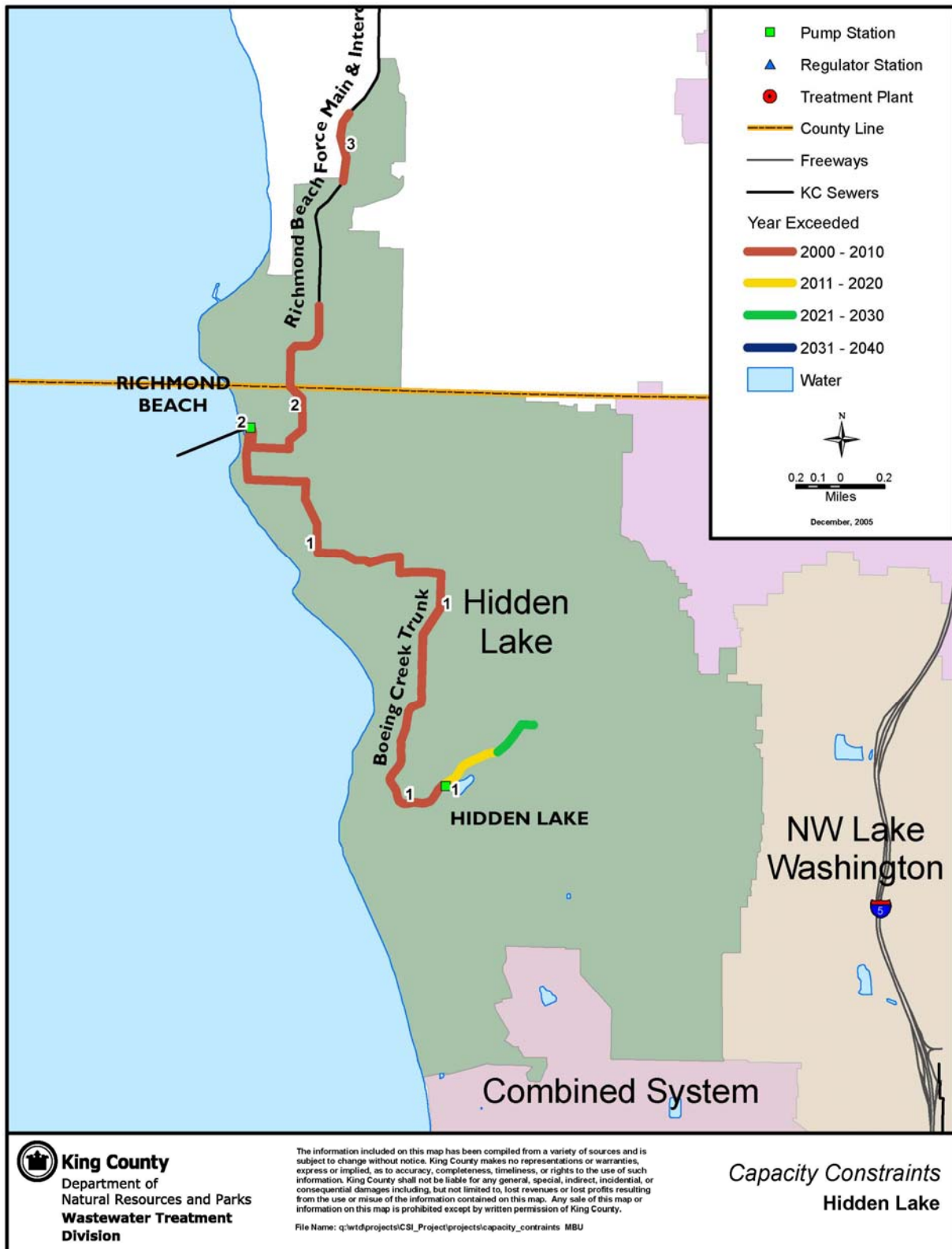
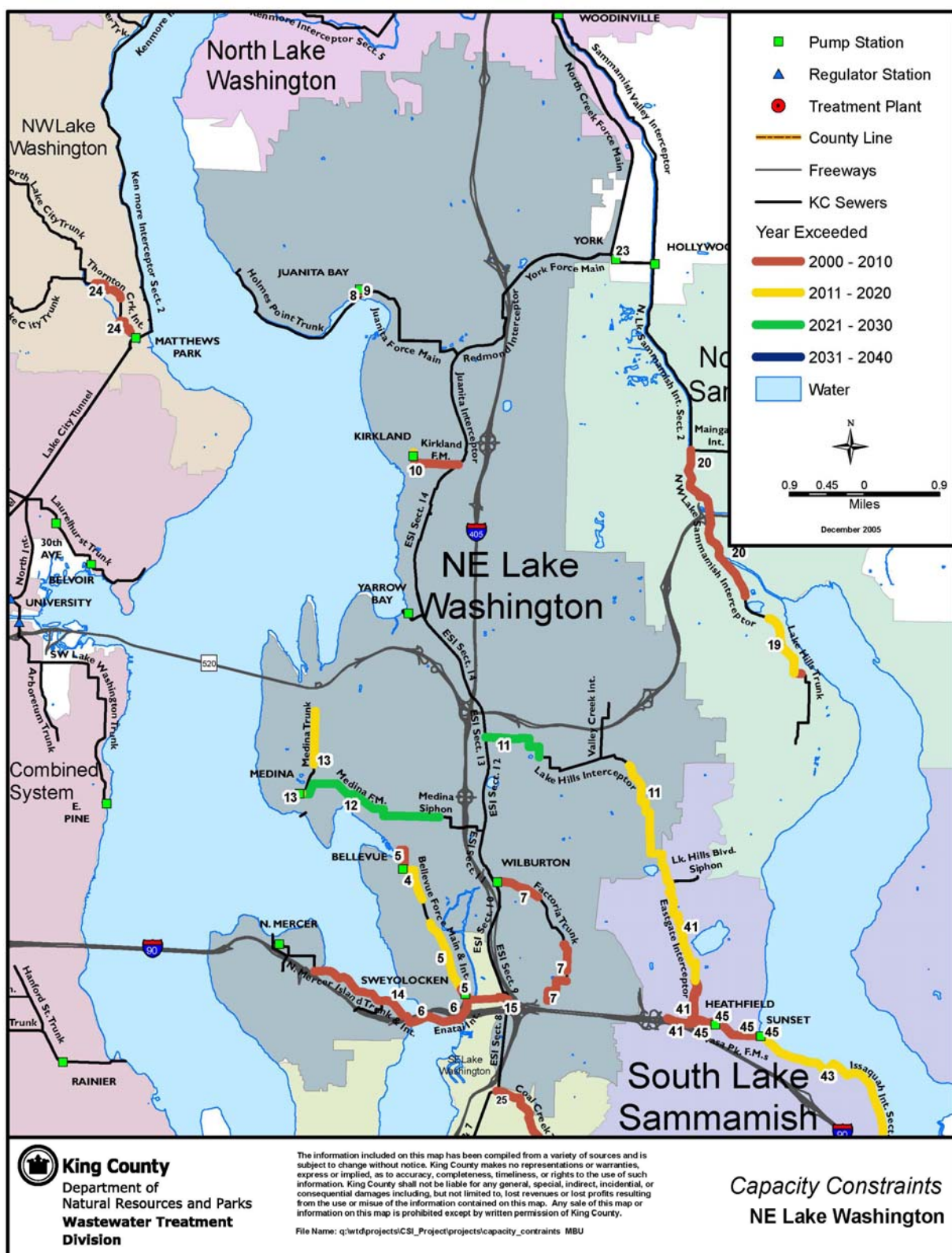


Figure 2-3. Capacity Constraints – Hidden Lake





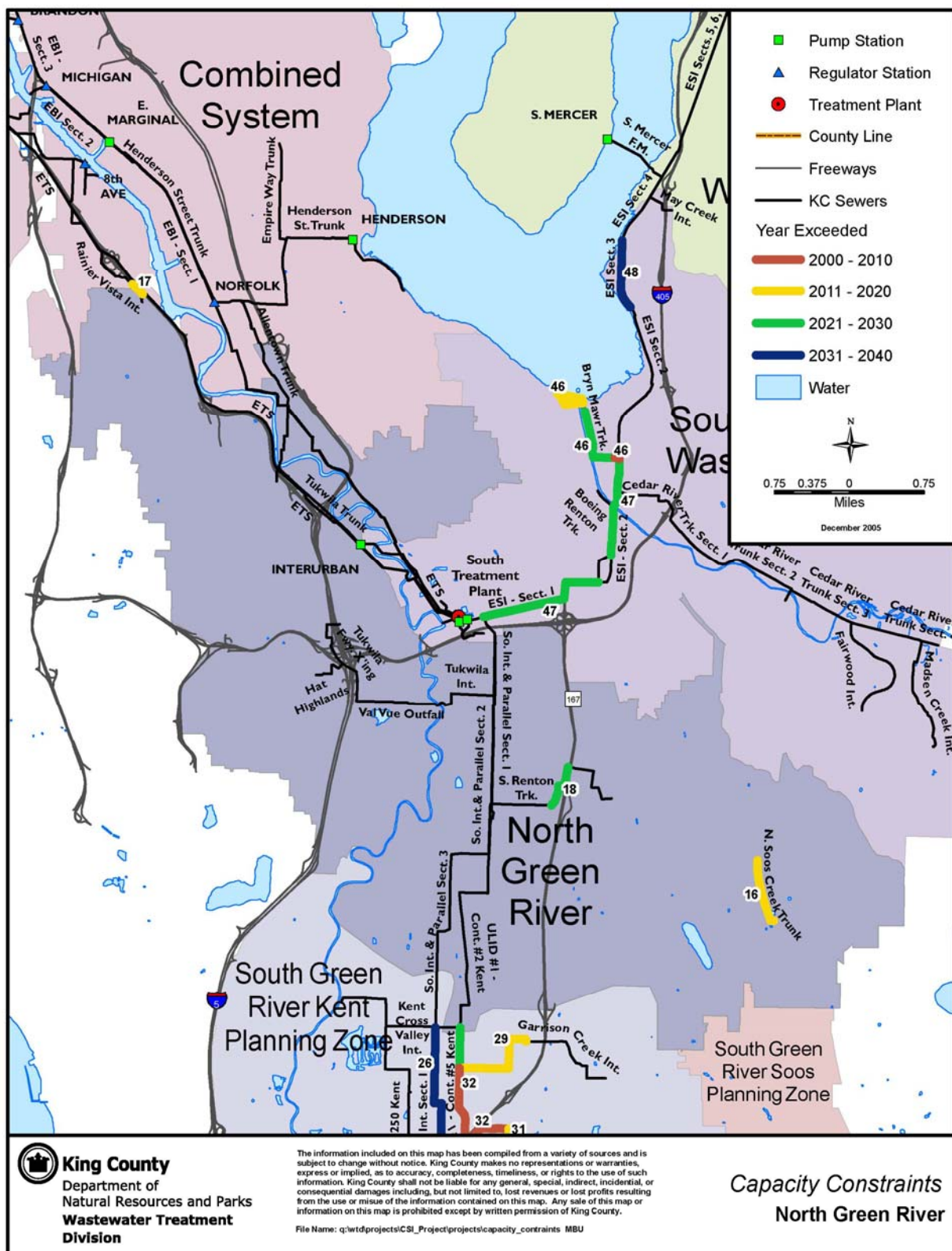


Figure 2-5. Capacity Constraints – North Green River



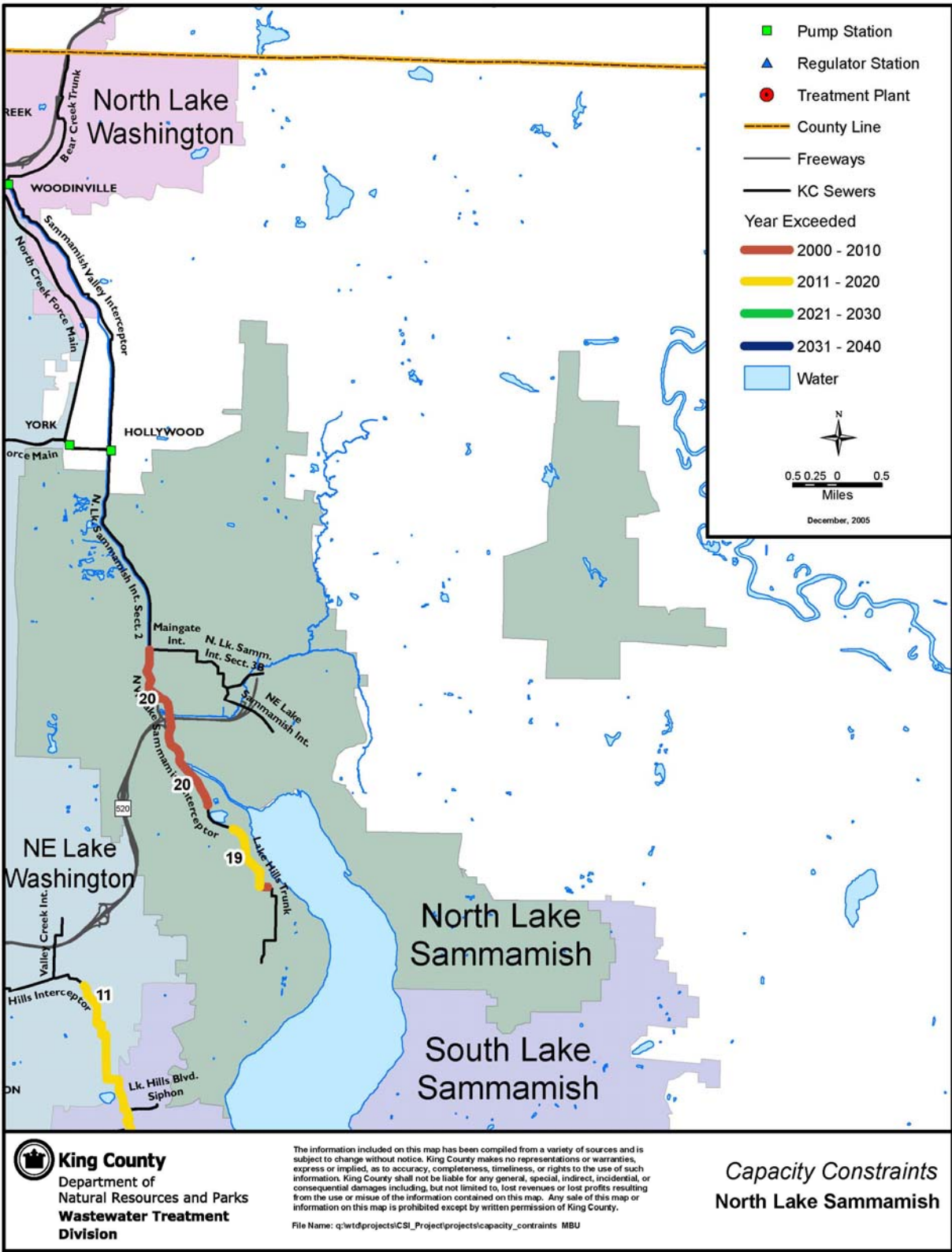


Figure 2-6. Capacity Constraints – North Lake Sammamish

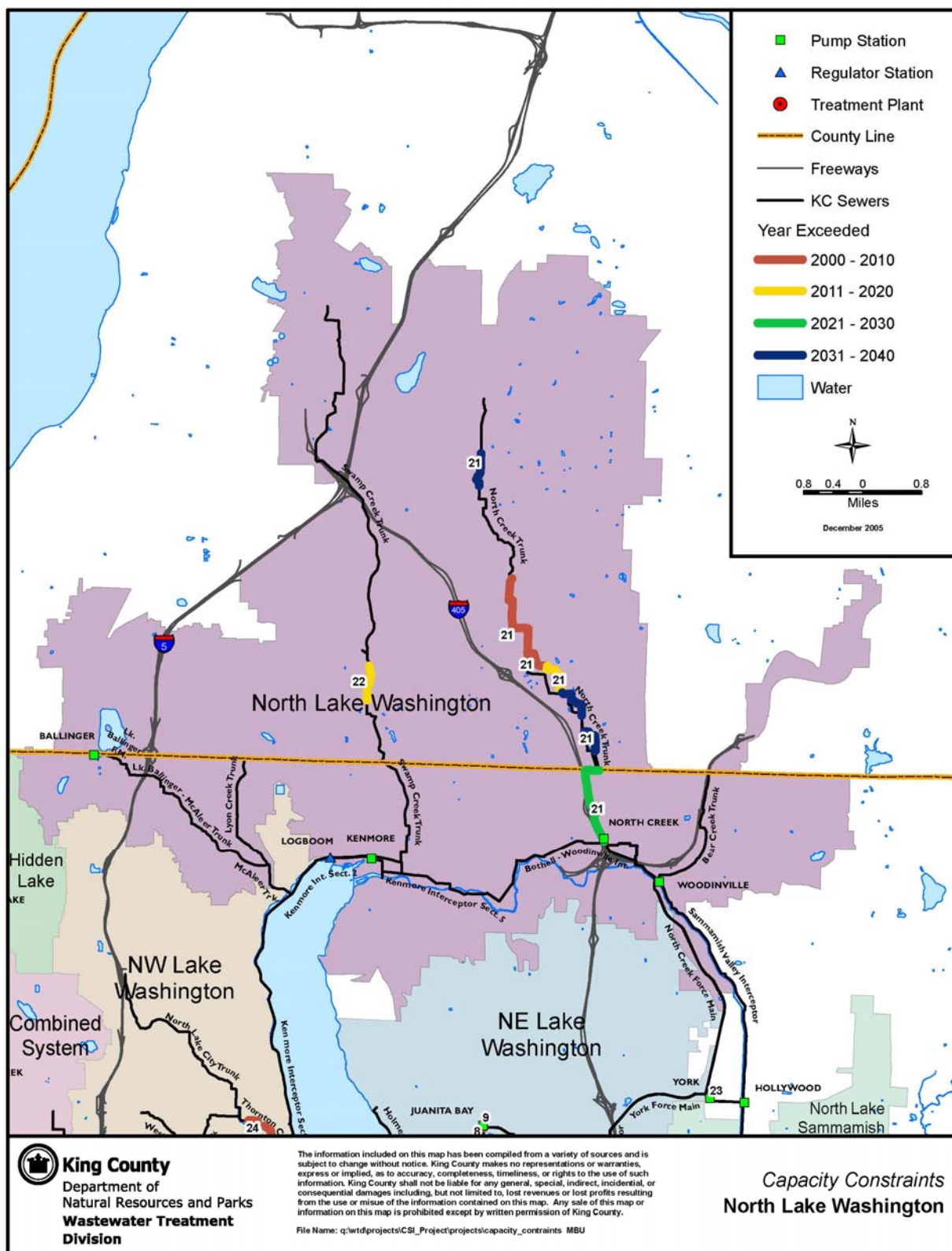


Figure 2-7. Capacity Constraints – North Lake Washington

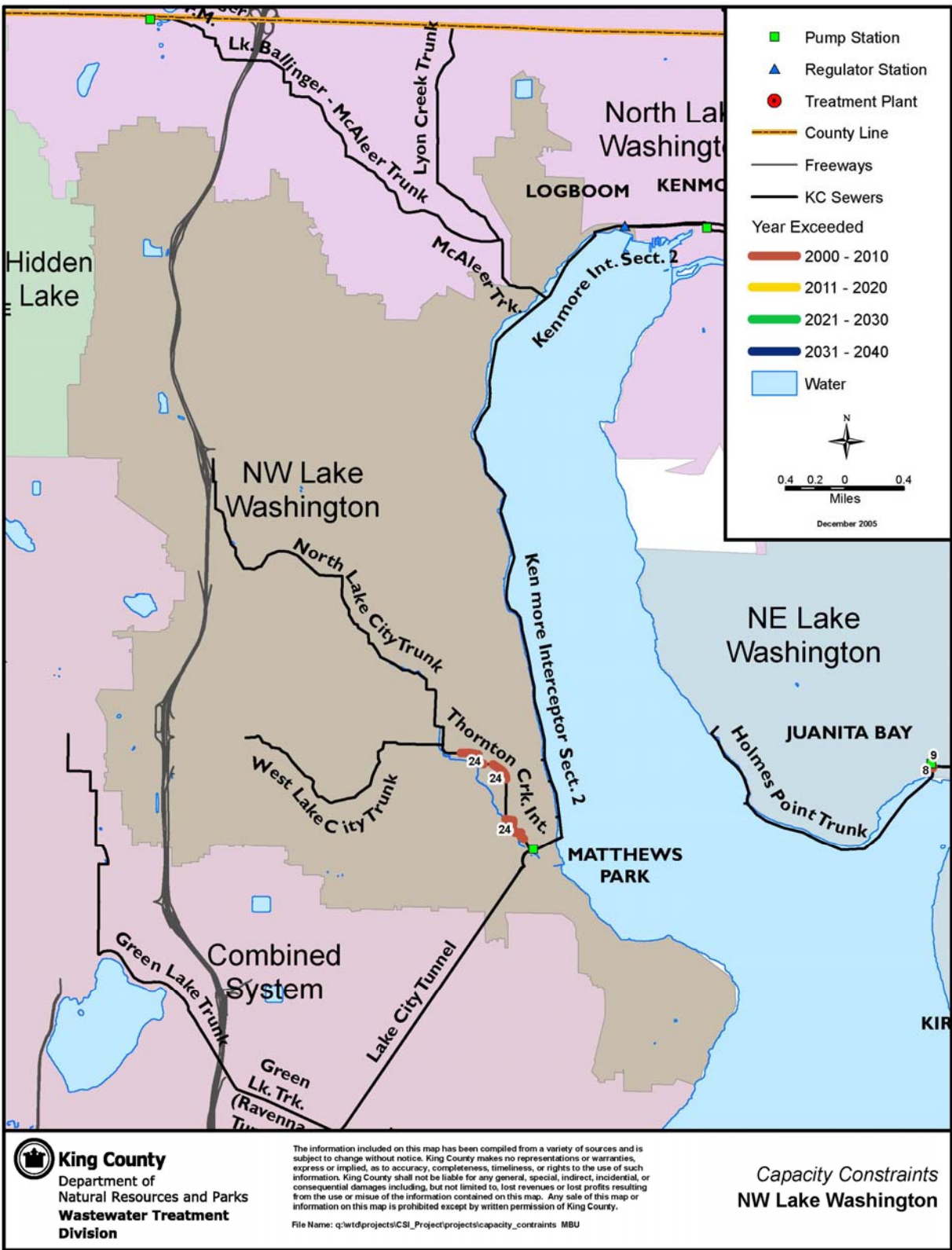


Figure 2-8. Capacity Constraints – Northwest Lake Washington



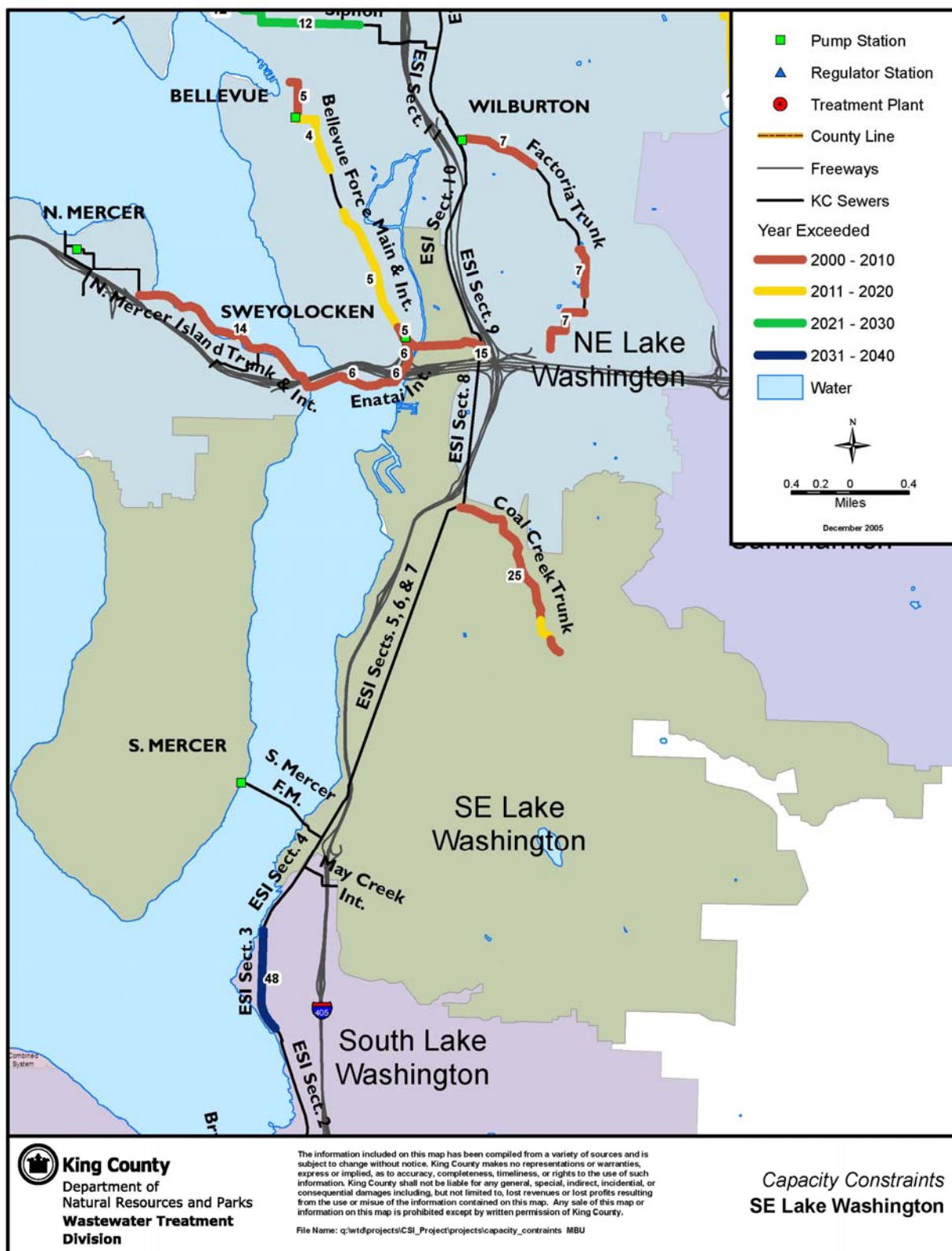


Figure 2-9. Capacity Constraints – Southeast Lake Washington



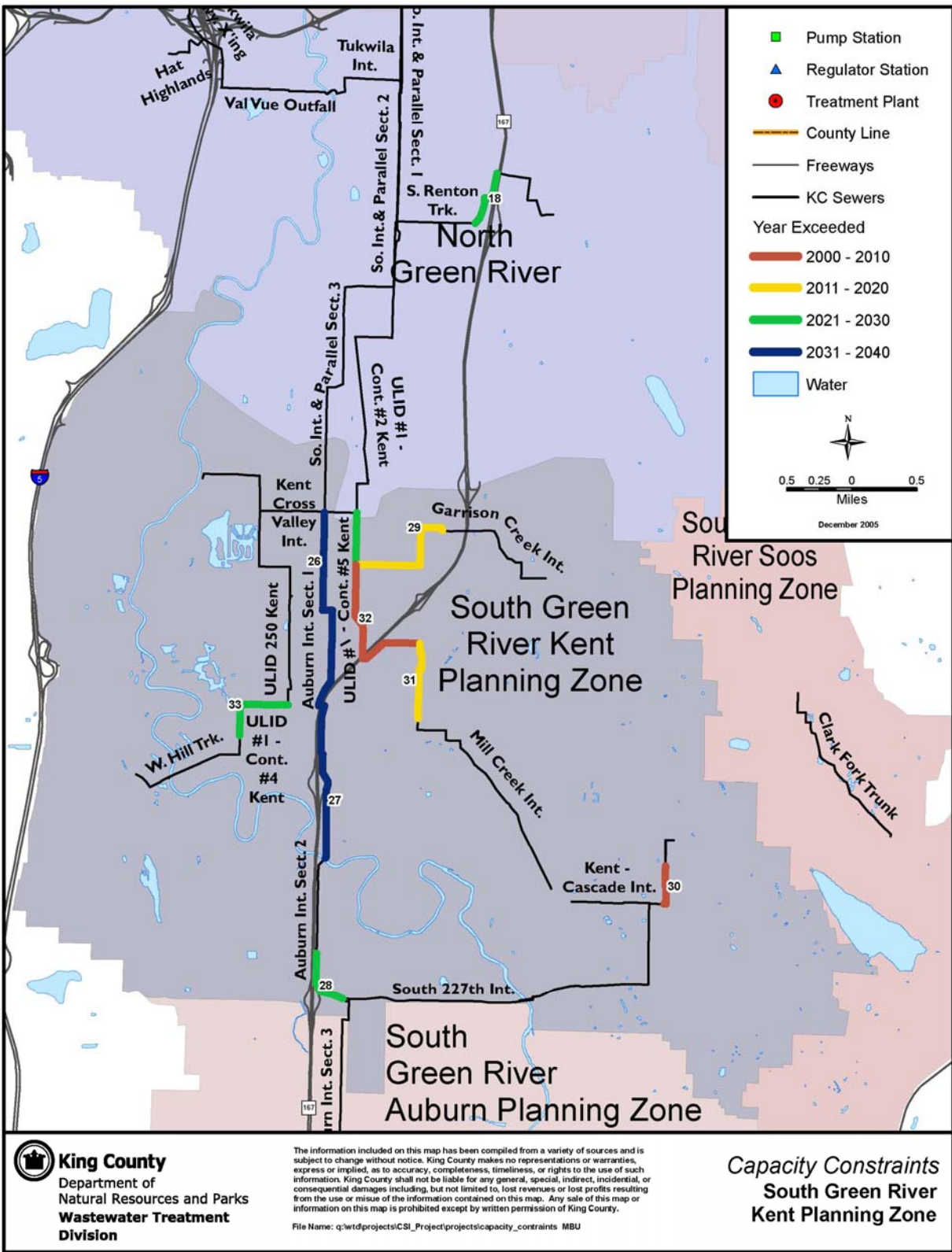


Figure 2-10. Capacity Constraints – South Green River, Kent Planning Zone

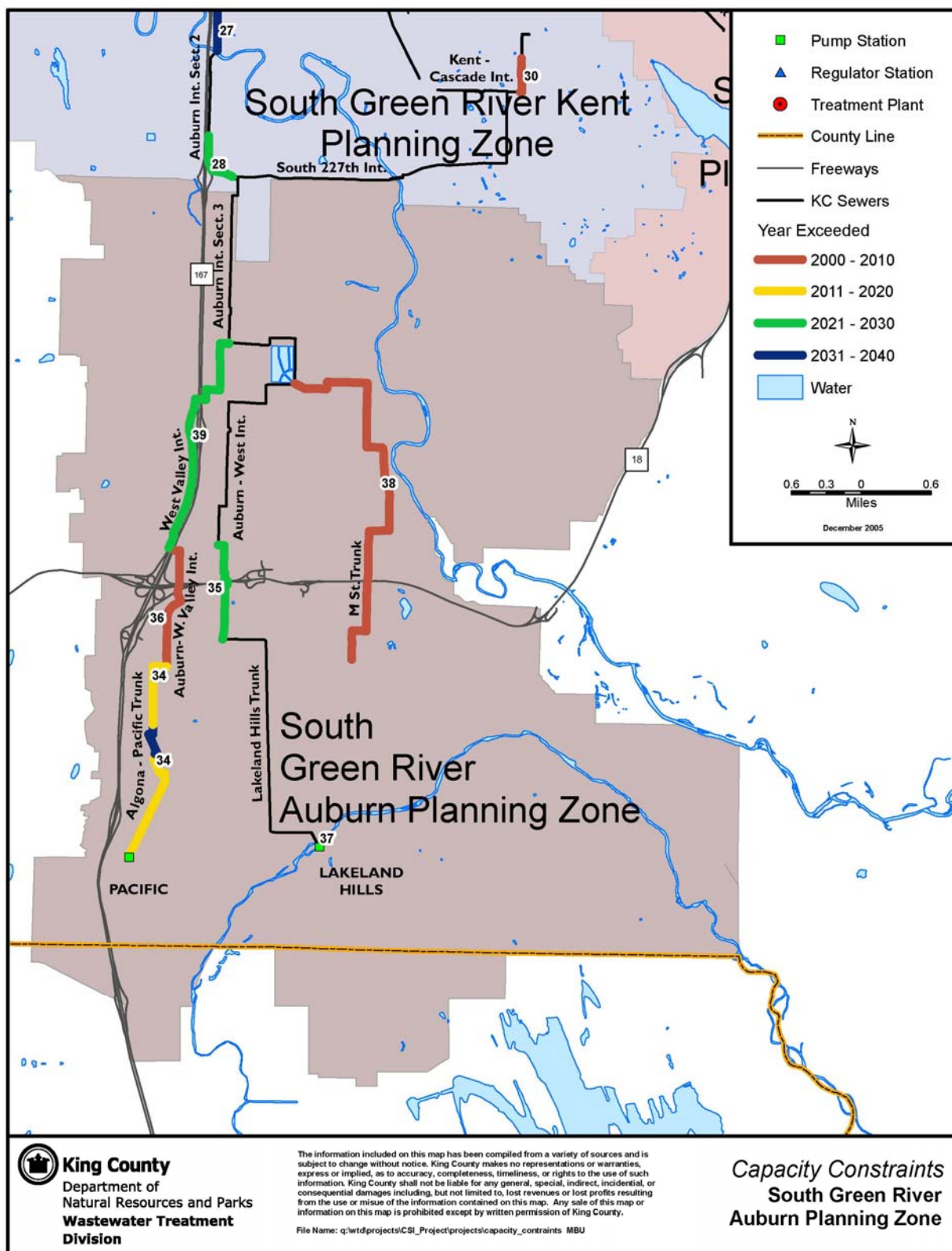


Figure 2-11. Capacity Constraints – South Green River, Auburn Planning Zone

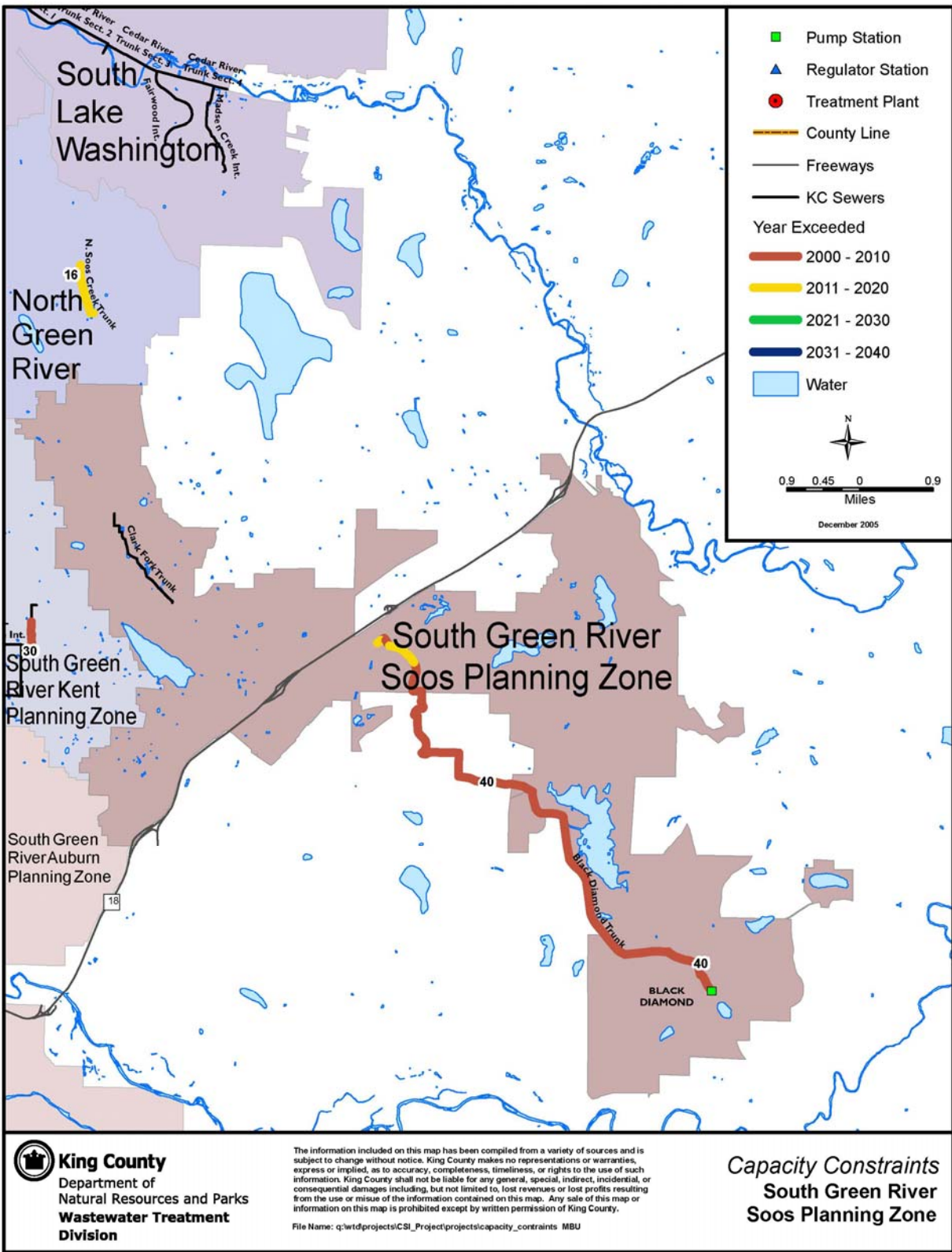


Figure 2-12. Capacity Constraints – South Green River, Soos Planning Zone



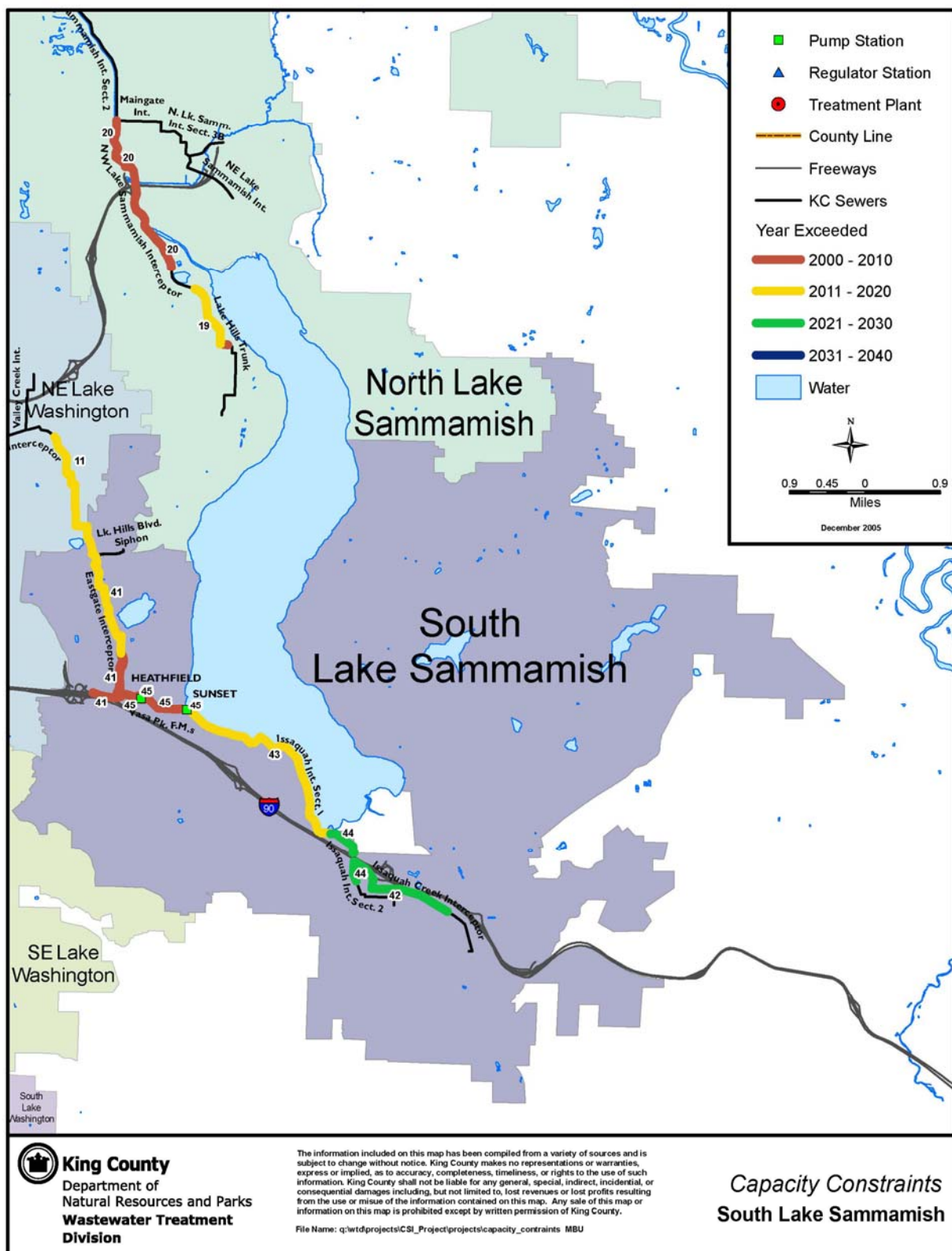


Figure 2-13. Capacity Constraints – South Lake Sammamish

